IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Allan R. Dunn

Serial No.: 10/705,689

Filing Date: November 10, 2003

For: METHOD OF TREATING INFLAMMATION IN THE JOINTS OF A BODY

Confirmation No. 4644
Customer No. 04219
Hamud, Fozia M., Examiner
Group Art Unit 1647

2800 S.W. Third Avenue
Historic Coral Way
Miami, Florida 33129

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF DR. ALLAN R. DUNN
PURSUANT TO 37 C.F.R. §1.132

I, ALLAN R. DUNN, declare as follows:

1. That I am the sole applicant and inventor of the new and inventive composition disclosed and claimed in the above-referenced U.S. Patent Application having Serial Number 10/705,689, entitled METHOD OF TREATING INFLAMMATION IN THE JOINTS OF A BODY (hereinafter, "the Application"), which is a divisional patent application of and claims priority to U.S. Patent Application having Serial Number 09/778,397 (hereinafter, "the Parent Application") now U.S. Patent Number 6,645,485 (hereinafter, "the '485 patent").

2. That I am a licensed Medical Doctor and a board certified Orthopedic Surgeon, and that through my extensive clinical practice over a period of more than 30 years I have gained a significant level of expertise in the field of Orthopedic Surgery, in particular, diseases and injuries of joints, including hip(s), knee(s), and ankle(s).

3. That attached hereto as Exhibit A is a true and accurate copy of my Curriculum Vitae, which illustrates my credentials, specifically, that I specialize in hip and knee reconstruction, arthritis surgery, joint trauma, total joint replacement, and arthroscopic surgery; that I have conducted orthopedic research throughout my career and discovered new treatments, developed products, defined their rationale, and designed, coordinated, and evaluated laboratory studies of stem cell production and clinical treatment of osteoarthritis and post-traumatic osteoarthritis; and that I am responsible for the preparation of numerous presentations and publications in the field of Intra-Articular Injections of Human Growth Hormone.

4. That, from about 1992 to 1993, I personally conducted extensive initial research directed towards intra-articular injections of purified growth hormone ("PGH") into joints of patients at dosages in the range of 0.25 to 0.75 milligrams per kilogram of body weight, wherein the PGH was dissolved in a buffer solution to a concentration of about 5.0 to 6.0 milligrams of PGH

per milliliter of buffer solution, and that these injections of PGH proved effective for regeneration of cartilage, as disclosed in U.S. Patent No. 5,368,051, which was issued to me in 1994.

5. That intra-articular injections of PGH at the dosages identified in paragraph 4 may cause side effects, and that such side effects may include elevated serum glucose levels and headaches.

6. That, from about 1999 to 2007, I personally conducted extensive subsequent research of the effects of reduced dosages of PGH, and that I personally treated patients with reduced dosages of PGH, specifically, dosages in a range of 0.025 to 0.249 milligrams of PGH per kilogram of body weight, wherein the PGH was administered at concentrations of about 5.0 to 6.0 milligrams per milliliter of buffer solution.

7. That in the course of this subsequent research and treatment of patients, I observed that a single intra-articular injection of PGH at dosages and concentrations in the ranges identified in paragraph 6, is effective for reducing and/or eliminating signs of inflammation, including pain, swelling, heat, and stiffness in the patients treated.

8. That in the course of this subsequent research, I further observed that multiple intra-articular injections of PGH at the dosages and concentrations in the ranges identified in paragraph 6, could further reduce the signs of inflammation in the patients

treated.

9. That in the course of this subsequent research, I further observed that patients treated with the intra-articular injections of PGH at dosages and concentrations in the ranges identified in paragraph 6, exhibited no sign of the side effects identified in paragraph 5.

10. That in the course of this subsequent research, only minimal regeneration of cartilage was observed in patients receiving intra-articular injection(s) of PGH at dosages and concentrations in the ranges identified in paragraph 6.

11. That a composition comprising PGH at reduced dosages in the ranges identified in paragraph 6, is significantly more economical than a composition comprising larger dosages of the PGH; for example, one (1) milligram of PGH costs approximately $50.00, thus, for an individual weighing one hundred (100) kilograms, a composition comprising an elevated dosage of PGH, i.e., 0.75 milligrams of PGH per kilogram of body weight, will cost approximately $3,750, whereas a composition comprising a significantly reduced dosage of PGH, i.e., 0.025 milligrams of PGH per kilogram of body weight, will only cost about $125.

12. That specific examples illustrating that intra-articular injection(s) of PGH at reduced dosages, namely in a range of about 0.07 milligrams to 0.11 milligrams of PGH per kilogram of body weight, is effective to reduce and/or eliminate signs of

inflammation and/or increase a patient's mobility or range of motion, were previously presented to the U.S. Patent and Trademark Office during prosecution of the Parent Application via a Declaration, dated November 21, 2002, and that a true and correct copy of the Declaration is attached hereto as Exhibit B.

13. That from about 2002 to 2005, I personally treated at least thirty-eight (38) patients (hereinafter, "the patients") with intra-articular injections of PGH at the reduced dosages, and at the concentrations disclosed and claimed in the Application (hereinafter, the "Inventive Composition").

14. That the patients comprised twenty-seven (27) males and eleven (11) females, each of which, at the time, suffered from osteoarthritis of their knee(s), and each of which were candidates for total knee replacement.

15. That the table attached hereto as Exhibit C provides a true and accurate summary of the results obtained from treatment of the patients with the Inventive Composition.

16. That the patients were treated with multiple injections of the Inventive Composition comprising a reduced dosage of PGH in a range of about 0.05 to 0.12 milligrams of PGH per kilogram of body weight, wherein the PGH was dissolved in a buffer solution to a concentration of about 5.0 to 6.0 milligrams of PGH per milliliter of buffer solution.

17. That prior to treatment with the Inventive Composition,

each patient was evaluated for pre-treatment pain using the Wong-Baker facial grimace scale combined with the Numerical Rating Scale ("NRS").

18. Based upon the aforementioned pre-treatment pain evaluations, each patient was assigned a numerical value ranging from zero (0) to ten (10), wherein zero (0) represents no pain, and ten (10) represents the most pain.

19. That in accordance with the aforementioned pre-treatment pain evaluations, the pre-treatment pain for the patients ranged from one out of ten ("1/10") to eight out of ten ("8/10"), and that the average pre-treatment pain score was five-point-seven out of ten ("5.70/10").

20. That subsequent to treatment with the Inventive Composition, each patient was individually evaluated for post-treatment pain, again using the Wong-Baker facial grimace scale combined with the NRS, and that the post-treatment pain score for the patients ranged from zero out of ten ("0/10") to four out of ten ("4/10"), and an average post-treatment pain score was zero-point-six-five out of ten ("0.65/10"), thus representing a significant average decrease in pain score of about five-point-zero-five out of ten ("5.05").

21. That prior to treatment with the Inventive Composition, the range of motion ("ROM") for each patient was measured using a goniometer and recorded.

22. That the pre-treatment range of motion for the patients ranged from one hundred ("100") degrees to one hundred and forty-five ("145") degrees, and that the average range of motion was about one hundred and twenty-six ("126") degrees.

23. That subsequent to treatment with the Inventive Composition, the range of motion ("ROM") for each of the patients was again measured using a goniometer, and recorded, and that subsequent to the treatment with the Inventive Composition, the average range of motion was about one hundred and thirty-eight ("138") degrees, an increase of about twelve ("12") degrees, or approximately ten percent (10%).

24. That the data shown in Exhibit C, as well as my personal observations of patients before and after treatment of the Inventive Composition indicate that, for each patient, signs of inflammation and/or pain either decreased or were completely eliminated following the intra-articular injection of PGH into the afflicted joint at dosages and concentrations in the ranges in accordance with the Inventive Composition.

25. That, based upon my extensive research and expertise in the field of orthopedic surgery, it is my opinion that the results identified in paragraph 24, obtained by treating patients with intra-articular injections of PGH at the reduced dosage levels of the Inventive Composition, i.e., a composition having PGH at dosages and concentrations in the ranges identified in paragraph 6,

combined with the fact that none of the patients treated with the Inventive Composition exhibited any signs of the side effects identified in paragraph 5, such as elevated serum glucose levels or headaches, would not have been expected by one of ordinary skill in the art at the time of the invention.

26. That, in my opinion, the data presented herein, in response to the Examiner's Office Action in the Application dated February 22, 2007, includes no new matter, and demonstrates that the Inventive Composition provides a safer, economical, reliable, and reproducible treatment alternative for inflammation and pain control.

27. That I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: August 18, 2007

Allan R. Dunn, M.D.
DR. ALLAN R. DUNN

EXHIBIT A

Allan R.Dunn, M.D.

Fellow American Academy of Orthopedic Surgery
Diplomate American Board of Orthopedic Surgery

Curriculum Vitae

- Home
- About Dr. Dunn
- Contact Info

ORTHOPEDIC SURGEON

PRIVATE PRACTICE, specializing in Hip and Knee Reconstruction, Arthritis Surgery, Joint Trauma, Total Joint Replacement, and Arthroscopic Surgery.

ORTHOPEDIC RESEARCH

THE DISCOVERER OF MORPHOANGIOGENESIS, the process by wh growth hormone rejuvenates adult bone and adult blood vessels in fetal structures which produce stem cells. These stem cells can be used to treat a variety of diseases and can also support regenerati of the cartilage surface of joints. (see publications)

THE DISCOVERER OF AN ACCESSORY VASCULAR SYSTEM IN CARTILAGE, a heretofore unknown direct connection between the general circulation and all of the cells in the cartilage joint surface.

THE DISCOVERER OF THE IAGH PROCESS, intra-articular injection growth hormone (IAGH) to regenerate articular cartilage. The first use IAGH injections to regenerate articular cartilage (1965).

HOSPITALS

Attending Orthopedic Surgeon, Miami Heart Institute/Mt. Sinai Hospital, Miami Beach, FL. Former Chief, Dept. of Orthopedic Surg St. Francis Hospital, Miami Beach, FL 1980-1990

TRAINING

1957	B.A. DEGREE: CORNELL UNIVERSITY, Ithaca, NY
1959	RESEARCH FELLOWSHIP: PHILLIP SAWYER, M.D., PH.D., N.Y. STA DOWNSTATE MEDICAL CENTER, NY, NY
1960	CLINICAL FELLOWSHIP: SIR ARTHUR DOUTHWAITE, SR. CONSULTANT, GUY'S HOSPITAL, London, England
1961	M.D. DEGREE: N.Y. STATE - DOWNSTATE MEDICAL CENTER, NY, I
1961-1962	INTERNSHIP: INTERNAL MEDICINE, MONTEFIORE HOSPITAL, NY,
1962-1963	RESIDENCY: GENERAL SURGERY, MONTEFIORE HOSPITAL, NY, NY
1963-1966	RESIDENCY: ORTHOPEDIC SURGERY, CORNELL MEDICAL CENTER, HOSPITAL FOR SPECIAL SURGERY, NY, NY
1986	CERTIFICATION TO USE RADIOACTIVE ISOTOPES, HARVARD SCH OF PUBLIC HEALTH, Cambridge, MA

RESEARCH

1965 ongoing	Laboratory and clinical studies. Numerous presentations & publications. (see attached)

1980 - ongoing Laboratory studies of stem cell production, the regenerative action growth hormone and its anti-inflammatory action. Publications anc lectures on Regrowth of Articular Cartilage, Joint Repair and the Microvascular System of Various Tissues and Tumors.

1998 - ongoing CARTILAGE REGROWTH: IAGH PROJECT - CHIEF INVESTIGATOR Clinical treatment of Osteoarthritis and Post-Traumatic Arthritis wil Intra-Articular Growth Hormone Injections to regenerate articular cartilage joint surfaces, decrease pain and swelling, and increase range of motion.

PATENTS

1965 - ongoing PATENTS and PATENTS PENDING: IAGH PROCESSES and SURGIC/ PRODUCTS

PRESENTATIONS & PUBLICATIONS

1966 MONOGRAPH: The Stimulation of Growth of Articular Cartilage by Intra-Articular Growth Hormone. Dr. Dunn is the discoverer of the use of IAGH injections to regenerate articular cartilage.

4/10/67 N.Y. ACADEMY OF MEDICINE, Orthopedic Meeting, NY, NY
Dr. Dunn was one of four Senior Orthopedic Surgical Residents chosen fo Outstanding Original Research from the orthopedic training programs in Massachusetts, New York and Pennsylvania. He presented "The Stimulati of the Growth of Articular Cartilage by Intra-Articular Growth Hormone". Discussor: Henry J. Mankin, M.D., Prof. & Chairman of Orthopedics, Harv University

2/16/86 AMERICAN ACADEMY OF ORTHOPEDIC SURGEONS, Annual Meeting, New Orleans, LA "Regrowth of Articular Cartilage by Direct Hormonal Inductior with Growth Hormone Following Full Thickness Surgical Debridement." Discussor: Donald P. Speer, M.D., Prof. of Orthopedics, University of Ariz Medical Center

10/31/90 ST. FRANCIS HOSPITAL, Miami Beach, FL
Lectured on "Arthroscopic Surgery of the Knee", as part of The Florida Medical Association Continuing Education accreditation program.

8/12/98 ROYAL NATIONAL ORTHOPEDIC HOSPITAL, London, England
Dr. Dunn presented "Regeneration of Articular Cartilage with Intra-Articul GH."

10/98 FOOD AND DRUG ADMINISTRATION (FDA) approved Dr. Dunn's clinical t to treat osteoarthritic knees with IAGH Injections.

11/6/98 HOSPITAL FOR SPECIAL SURGERY, CORNELL MEDICAL CENTER, Annual Alumni Meeting, NY, NY Dr. Dunn presented "Regeneration of Articular Cartilage with Intra-Articular Growth Hormone: The New Science Which Demonstrates That Cartilage Is Vascular, and This Vascularity Supports Regeneration."

1999-present EXPANSION OF FDA CLINICAL TRIAL. The high success rate of the injecte knees, with minimal side effects, led Dr. Dunn to expand his clinical treatments to include other joints and to determine the most effective do and frequency of IAGH injections. Results of IAGH treatment of the joints be included in future FDA studies. Dr. Dunn has treated more than 200 patients with IAGH injection.

5/00' LIFE EXTENSION FOUNDATION JOURNAL, "Doing Away With Arthritis - A Innovative Procedure Involving Human Growth Hormone Stimulates Cartl Growth and Joint Mobility."

5/13/00 THE THIRD RIVA CONGRESS ON ORTHOPEDIC SURGERY, UNIVERSITY OI VERONA, Verona, Italy Dr. Dunn presented "Regeneration of Articular Cartilage in Adult Patients Following Intra-Articular Growth Hormone (IAG Injections, and the New Science Which Supports This Regeneration."

10/13/00 ORLANDO REGIONAL HOSPITAL CENTER, Orlando, FL
Visiting Orthopedist Pro Tem by invitation. "Intra-Articular Injection of rH and Regeneration of Articular Cartilage: A Revision of the Basic Science o Chondrogenesis."

5/11/01 KRONOS INSTITUTE, Phoenix Arizona
Visiting lecturer by invitation. "Intra-Articular Injections of Human Growtl Hormone To Treat Osteoarthritis and Post-Traumatic Arthritis."

5/17/01 FLORIDA ORTHOPEDIC SOCIETY – KEYNOTE SPEAKER, ANNUAL CONFERENCE, Orlando, FL
"Intra-Articular Growth Hormone(IAGH) Injections to Treat Osteoarthritis Post-Traumatic Arthritis, and the Science Which Makes It Possible."

10/4/01 HARVARD UNIVERSITY, DEPT. OF SURGERY, VASCULAR RESEARCH DIVISION, Cambridge, MA Visiting lecturer by invitation. Dr. Dunn preser his discovery of a new form of anglogenesis: "Morpho-Angiogenesis – a Unique Action of Growth Hormone". Dr. Dunn demonstrated (1) the rejuvenation of bone and cartilage caused by intra-articular injections of growth hormone, (2) the micro-tubules which connect the vascular syste chondrocytes, and (3) production of stem cells to support various disease treatments and regeneration of the cartilage surface of joints.

5/02 MICROVASCULAR RESEARCH, 63:295-303 (2002). International peer-reviewed Journal, "Morphoanglogenesis: A Unique Action of Growth Hormone". Publication of Dr. Dunn's discovery of a new form of Angiogenesis: the ability of growth hormone to rejuvenate mature bone t cartilage and mature blood vessels to fetal blood vessels which produce s cells. These stem cells can be used to treat a variety of diseases and can regenerate new cartilage joint surfaces.

6/12/02 THE INTERNATIONAL CARTILAGE REPAIR SOCIETY, Annual Meeting, Toro Canada
Dr. Dunn introduced his discovery that cartilage has an accessory vascula system which connects chondrocytes directly to the vascular system. (1) "Cartilage is Vascular!" (2) Morphoanghiogenesis – a unique action of gro hormone, (3) Intra-articular injections of growth hormone increase space between the bones and decrease all signs of inflammation in osteoarthriti and post-traumatic arthritis of the ankle.

11/7/02 JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE SYMPOSIUM - "JOINT PRESERVING TREATMENT OF THE KNEE", Williamsburg, VA
"Intra-Articular Injections of Human Growth Hormone Reduce Inflammati and Increase the Space Between the Bones in Advanced Osteoarthritis of Knee."

2/6/03 AMERICAN ACADEMY OF ORTHOPEDIC SURGERY, Annual Meeting, New Orleans, LA
"Intra-Articular Growth Hormone (IAGH) Injections Reverse Adverse Effec of Post-Traumatic Arthritis of the Ankle and Sub-Talar Joints."

9/27/03 INTERNATIONAL CARTILAGE REPAIR SOCIETY, 5th Annual Meeting, Ghen Belgium, Presentation of Four Papers
About the excellent results of IAGH Treatment and the Science behind IA Action, emphasizing rejuvenation of blood vessels and production of ste

cells.

7/13/04 LECTURE ON IAGH SCIENCE AND CLINICAL RESULTS at The Aspen Institu
Aspen, Colorado. Evaluation of failed attempts by other health providers
have no training and suggestions for correction of the failures.

1/8/06 - 1/11/06 INTERNATIONAL CARTILAGE REPAIR SOCIETY, San Diego, CA.

1. Biologic Arthroplasty: Using IAGH Injections to Re-grow Articular Cartilage in Arthritic Joints. A 21st Century Treatment.
2. Intra-Articular Injections of HGH Heals Traumatic Defects and Avascular Necrosis of Femoral Condyles.
3. Intra-Articular Injections of HGH Reverse Avascular Necrosis of th Talar Body.
4. Morphoangiogenesis: A Unique Action of Growth Hormone.

2/5/06 UNIVERSITY OF MIAMI BIOTECHNOLOGY SYMPOSIUM, Miami, FL
Morphoangiogenesis: A Unique Action of GH that Produces Fenestrated Capillaries and Stem Cells. Meeting with Dr. Judah Folkman, M.D., Harva University.

3/23/06 - 3/27/06 AMERICAN ACADEMY OF ORTHOPEDIC SURGEONS, Chicago, IL.
Morphoangiogenesis Rejuvenates Adult Subchondral Vessels to Provide a Fetal Source of Stem Cells. Promoting the multiple uses of these stem cel as treatments.

5/10/07 ALUMNI TODAY - JOURNAL NY STATE UNIV
COLLEGE OF MEDICINE

Recapitulation of Development in Adults: A Method to Produce Stem Cells to Regenerate Articular Cartilage.

9/28/07 10/3/07 INTERNATIONAL CARTILAGE REPAIR SOCIETY, Warsaw Poland

Unique action of growth hormone rejuvenates adult arteries to form fetal fenestrated capillaries , create stem cells and recapitulate the cascade of development in adults.

EXHIBIT B

P:\MM2000\PAT\APP\1902 Dunn, Allan R\1902-Declaration v4.wpd

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Allan R. Dunn

Serial No.: 09/778,397

Filing Date: February 2, 2001

For: METHOD OF TREATING INFLAMMATION IN THE JOINTS OF A BODY

Group Art Unit 1647
Hamud, F., Examiner

Honorable Commissioner of Patents and Trademarks

Washington, D.C. 20231

Dear Sir:

DECLARATION

I, ALLAN R. DUNN, declare as follows:

1. That I am the sole applicant and inventor of the new and inventive method disclosed and claimed in the above-referenced U.S. Patent Application having Serial Number 09/778,397, entitled METHOD OF TREATING INFLAMMATION IN THE JOINTS OF A BODY (hereinafter "the Application").

2. That the inventive method disclosed and claimed in the Application is at least partially based upon my research which was initially directed towards the regeneration of cartilage through multiple intra-articular injections of purified growth hormone; that in carrying out this research I observed that the signs of inflammation, including pain, swelling, heat, and

stiffness, could frequently be reduced and/or eliminated following the intra-articular injection of just a single dose of purified growth hormone; and further, that I observed that multiple intra-articular injections of purified growth hormone could further reduce the signs of inflammation in the subjects treated.

3. That, in my opinion, the data presented herein includes no new matter and is presented solely in response to the Examiner's request for data which is illustrative of the results obtained following implementation of the inventive method disclosed and claimed in the Application.

4. That I have personally implemented and/or controlled the implementation of the inventive method disclosed and claimed in the Application on at least 20 patients between the latter part of 1999 and early 2001.

5. That Table I herein provides a true and accurate summary of the results obtained from implementation of the inventive method disclosed and claimed in the Application on the aforementioned 20 patients:

TABLE I

	Male	Female	Total
Number of Patients:	14	6	20

Age (yrs):[1]

Range - 48 to 90 years

Mean - 69.9 years

Weight (kg):[1]

Range - 54.5 to 95.4 kilograms

Mean - 75.46 kilograms

Dosage (mg/kg):

Range - 0.07 to 0.11 mg/kg

Mean - 0.08 mg/kg

Results:

Improved - 14

Unchanged - 6

Worsened - 0

6. That my personal observations and/or the observations obtained and reported by persons under my direct control and supervision of patients before and after implementation of the inventive method disclosed and claimed in the Application indicate that, for those patients exhibiting an improvement, signs of inflammation either decreased or were completely

[1] Age and weight referenced herein is the age and/or weight of the patient at the time of implementation of the inventive method disclosed and claimed in the Application.

eliminated following the intra-articular injection of a single dose of purified growth hormone into the afflicted joint. In addition, each of the patients represented in Table 1 received at least three (3) intra-articular injections of purified growth hormone over a period of time, and several patients exhibited a further reduction or elimination of the signs of inflammation, following subsequent intra-articular injections.

7. That the specific observations of Patients 1 through 4 before and after implementation of the inventive method disclosed and claimed in the Application, as presented below, are representative of the results obtained and summarized in Table I herein.

PATIENT 1:

8. That on or about May 22, 2000, Patient 1, a 65 year old female weighing 83 kg, received an initial intra-articular injection containing a total of 5.8 mg of purified growth hormone (equal to 0.070 milligrams of purified growth hormone per kilogram of body weight, or 0.070 mg/kg), into the joint of her right ankle. Prior to the initial intra-articular injection, Patient 1 was afflicted with arthritis in her right ankle for approximately ten (10) years, accompanied by moderate to severe pain, heat, swelling, and tenderness, having a pain score of five out of ten (5/10), and an inability to place her right foot flat on the ground, resulting in a limp on her right

side. The mobility in the right ankle of Patient 1, prior to the initial intra-articular injection was minus ten degrees (-10°) up and thirty-five degrees (35°) down. An initial X-ray of the right ankle of Patient 1 indicated no perceivable or approximately 0 millimeter joint space (i.e. bone to bone contact).

On or about June 7, 2000, following the initial intra-articular injection, Patient 1 experienced little to no pain or heat in her right ankle, having a pain score of one out of ten (1/10), and was able to place her right foot flat on the ground. The mobility in the right ankle of Patient 1 at this time increased to minus five degrees (-5°) up and forty degrees (40°) down. There was no swelling in the right ankle at this time. Patient 1 received a second intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.070 mg/kg) on or about June 7, 2000.

On or about June 21, 2000, Patient 1 was reevaluated. Her ankle was not swollen or in pain. Ankle motion was zero degrees up and 45 degrees down. Patient 1 received a third intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.070 mg/kg).

On or about July 5, 2000, Patient 1 was seen again. Following the third intra-articular injection, Patient 1 experienced no pain, heat, or swelling, having a pain score of zero out of ten (0/10), and exhibited no limp. The mobility in

articular injection, Patient 2 exhibited minimal swelling and slight warmth in his left ankle. At this time, Patient 2 had a significantly reduced pain score of two out of ten to three out of ten (2/10 to 3/10). The mobility in the left ankle of Patient 2, following the initial intra-articular injection, was seven degrees (7°) up and thirty degrees (30°) down, and an X-ray indicated an increase in joint space to approximately 1.5 millimeters. Patient 2 received a second intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.085 mg/kg) on or about August 2, 2000.

On or about August 16, 2000, following the second intra-articular injection, Patient 2 experienced no pain, heat, or swelling in his ankle. Patient 2 had a pain score of zero out of ten (0/10) at this time, and no longer walked with a limp. Patient 2 received a third intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.085 mg/kg) on or about August 16, 2000.

On or about August 30, 2000, Patient 2 received a fourth intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.085 mg/kg).

On or about August 30, 2000, following the fourth intra-articular injection, Patient 2 reported experiencing only occasional pain, even after long walks, having a pain score of one out of ten (1/10), otherwise, experiencing no pain and having a pain score of zero out of ten (0/10). An X-ray of the

the right ankle of Patient 1 at this time was zero degrees (0°) up and forty-five degrees (45°) down. Further, an X-ray of the right ankle of Patient 1 following the third intra-articular injection indicated an increase in joint space to approximately 3.0 millimeters. Patient 1 exhibited no side effects as a result of this treatment.

PATIENT 2:

9. That on or about July 19, 2000, Patient 2, a 52 year old male weighing 68 kg, received an initial intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.085 mg/kg) into the joint of his left ankle. Prior to the initial intra-articular injection, Patient 2 experienced pain, heat, swelling, and stiffness in his left ankle, which was dislocated and fractured in 1992 while skydiving. Prior to the initial intra-articular injection, Patient 2 had a pain score of eight out of ten to nine out of ten (8/10 to 9/10), walked with a limp, and had tenderness in the left ankle. As a result, Patient 2 was unable to work. The mobility in the left ankle of Patient 2, prior to the initial intra-articular injection, was seven degrees (7°) up and thirty degrees (30°) down. An initial X-ray of the left ankle of Patient 2 indicated no perceivable (or approximately 0 millimeter joint space (i.e. bone to bone contact).

On or about August 2, 2000, following the initial intra-

left ankle of Patient 2 following the fourth intra-articular injection indicated an increase in joint space to approximately 2.5 millimeters. Patient 2 exhibited no side effects as a result of this treatment.

PATIENT 3:

10. That on or about November 27, 2000, Patient 3, a 60 year old female weighing 62 kg, received an initial intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.094 mg/kg) into the joint of her left knee. Prior to the initial intra-articular injection, Patient 3 experienced pain, swelling, and warmth in her left knee. Patient 3 was unable to walk more than a few blocks, and when she did walk, she walked with a limp. Patient 3 had a pain score of four out of ten to five out of ten (4/10 to 5/10) on average, with a peak pain score of eight out of ten (8/10), prior to the initial intra-articular injection. The mobility in the left knee of Patient 3, prior to the initial intra-articular injection, was in the range of five degrees (5°) to one-hundred and thirty-five degrees (135°). An initial X-ray of the left knee of Patient 3 indicated no perceivable or approximately 0 millimeter joint space medially (i.e. bone to bone contact).

On or about December 11, 2000, Patient 3 was re-examined, following the initial intra-articular injection. Patient 3 experienced no pain, swelling, or warmth in her left knee, and

had a pain score of zero out of ten (0/10). The mobility in the left knee of Patient 3, following the initial intra-articular injection, was in the range of one degree (1°) to one-hundred and thirty degrees (130°). Patient 3 received a second intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.094 mg/kg) on or about December 11, 2000.

On or about December 27, 2000, Patient 3 was re-examined, following the second intra-articular injection. Patient 3 experienced no pain, swelling, or warmth in her left knee, and had a pain score of zero out of ten (0/10). The mobility in the left knee of Patient 3, following the initial intra-articular injection, was in the normal range of zero degrees (0°) to one-hundred and thirty-five degrees (135°). An X-ray of the left knee of Patient 3 at this time indicated an increase in joint space to approximately 1 millimeter. Patient 3 received a third intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.094 mg/kg) on or about December 27, 2000.

On or about January 15, 2001, following the third intra-articular injection Patient 3 was re-examined. Patient 3 experienced no pain, swelling, or warmth at this time, and had a pain score of zero out of ten (0/10). The mobility in the left knee of Patient 3 was in the range of two degrees (2°) to one-hundred and forty degrees (140°). An X-ray of the left knee of Patient 3 at this time indicated a joint space of

approximately 1 millimeter. Patient 3 received a fourth intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.094 mg/kg) on or about January 15, 2001.

On or about January 29, 2001, Patient 3 was re-examined, following the fourth intra-articular injection. Patient 3 experienced nc pain, swelling, or effusion, and had a pain score of zero out of ten (0/10). An X-ray of the left knee of Patient 3 at this time indicated an increase in joint space to approximately 3 millimeter. Further, Patient 3 exhibited no side effects as a result of this treatment.

PATIENT 4:

11. That on or about January 24, 2001, Patient 4, a 72 year old male weighing 61 kg, received an initial intra-articular injection containing a total of 5.8 mg of purified growth hormone (0.095 mg/kg) into the sub-talar joint of his right ankle. Prior to the initial intra-articular injection, Patient 4 experienced arthritis of the sub-talar joint in his right ankle, reportedly resulting from a fracture suffered from a fall from a ladder in 1997. The arthritis experienced by Patient 4 was accompanied by pain, swelling, and warmth in his right ankle, which caused him to walk with a limp. Patient 4 had a pain score of five out of ten (5/10), prior to the initial intra-articular injection. The mobility in the right ankle of Patient 4, prior to the initial intra-articular injection, was

five degrees (5°) up, thirty-five degrees (35°) down, and the sub-talar joint had a total range of motion of five degrees (5°). An initial X-ray of the right ankle of Patient 4 indicated no perceivable or approximately 0 millimeter joint space (i.e. bone to bone contact).

On or about January 31, 2001, Patient 4 was re-examined, following the initial intra-articular injection. Patient 4 experienced no pain, warmth, or swelling, and had a pain score of zero out of ten (0/10).

12. That I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: Nov 21, 2002 Allan R. Dunn

ALLAN R. DUNN

EXHIBIT C

name	pain before	pain after	ROM pre	ROM post	Wgt	mgm/Kg
37	5/10	0/10	5-135	0-140	104.5	0.05
38	6/10	0/10			77.3	0.06
39	5/10	2/10	5-130	5-134	103.2	0.06
40	6/10	1/10	10-110	7-130	109.5	0.05
47	5/10	1/10	12-140	10-140	88.6	0.06
49	7/10	4/10	5-122	0-135	60.9	0.08
50	5/10	1/10	2-147	0-138	86.4	0.06
51	5/10	0/10	10-120	4-128	81.8	0.06
52	4/10	0/10	5-140	0-150	70.5	0.07
53	6/10	0/10	8-140	0-150	69.5	0.07
54	6/10	1/10	0/130	0-148		
55	6/10	2/10	0-140	0-145	86.4	0.06
56	7/10	1/10	7-120	5-130	60	0.08
57	3/10	0/10	8-140	0-150	81.8	0.06
58	7/10	2/10	7-135	5-145	106.8	0.09
60	4/10	1/10	6-146	5-139	81.8	0.06
64	7/10	0/10	5-128	5-144	59.1	0.08
65	6/10	1/10	5-150	0-149	81.8	0.06
66	6/10	0/10	18-130	12-134	84.1	0.06
67	4/10	2/10	10-125	12-130	85.5	0.06
68	8/10	0/10	3-128	0-138	67.3	0.07
69	8/10	1/10	5-130	0-138	93.2	0.05
70	3/10	0/10	5-150	0-152	60	0.08
73	5/10	3/10	7-148	0-140	88.6	0.06
74	5/10	0/10	4-140	0-143	113.6	0.09
75	7/10	0/10	5-125	3-135	83.6	0.06
77	6/10	0/10	5-128	0-135	77.3	0.06
78	5/10	0/10	10-135	5-140	94.1	0.05
80	6/10	0/10	7-138	3-150	65	0.08
81	7/10	0/10	9-148	0-134	83.5	0.06
82	4/10	1/10	14-140	5-152	86.4	0.06
85	6/10	0/10	5-130	0-140	61.4	0.08
86	1/10	0/10	7-135	0-142	75.5	0.07
87	5/10	0//10	8-145	2-145	65.9	0.08

106	6/10	0/10	12-133	10-134	77.3	0.06
111	6/10	0/10	0-128	5-152	81.8	0.12
114	5/10	1/10	15-125	10-130	94	0.11
115	8/10	0/10	4-150	0-152	90.9	0.11
116	7/10	0/10	15-118	5-140	86.8	0.12